CLAIMED IS:

1. A failure analyzer comprising:

an analysis plate including a first main surface mounting a sample thereon and a second main surface opposite to said first main surface; and

a failure detector including an optical system and detecting a failure caused in said sample using said optical system, wherein

a recess is provided in said second main surface of said analysis plate,

a protrusion which functions as a solid immersion lens and does not protrude from said second main surface is provided on a bottom surface of said recess, and

said failure detector irradiates a light onto said sample through said protrusion from a direction of said second main surface of said analysis plate, or detects a light which is emitted from said sample and penetrates through said protrusion.

2. The failure analyzer according to claim 1, wherein,

said analysis plate is also used as a stage mounting said sample thereon.

3. The failure analyzer according to claim 1, wherein

said analysis plate is made of silicon.

4. The failure analyzer according to claim 2, wherein,

said analysis plate is made of quartz glass.

5. The failure analyzer according to claim 1, wherein

said recess provided in said second main surface of said analysis plate includes

a plurality of recesses, and

said protrusion includes a plurality of protrusions provided on respective bottom surfaces of said plurality of recesses.

6. The failure analyzer according to claim 5, wherein

said sample includes a semiconductor wafer in which a plurality of semiconductor chips are formed, and

said plurality of recesses and said plurality of protrusions are situated so as to face said plurality of semiconductor chips, respectively, to be used for analyzing said plurality of semiconductor chips, respectively.

7. The failure analyzer according to claim 5, wherein

each of said plurality of protrusions is spherical, and

said plurality of protrusions include respective locally spherical surfaces with different radiuses.

8. The failure analyzer according to claim 1, further comprising:

a support member for supporting said sample independently of said analysis plate; and

a first driver for moving said analysis plate in parallel to said first main surface.

9. The failure analyzer according to claim 8, further comprising

a second driver for moving said optical system of said failure detector in parallel to said first main surface of said analysis plate, wherein

said first driver notifies said second driver of movement information of said

analysis plate, and

said second driver moves said optical system based on said movement information.

10. The failure analyzer according to claim 1, further comprising:

a probe coming into contact with said sample on said analysis plate; and

a driver for moving said probe and said sample in parallel to said first main surface of said analysis plate independently of said analysis plate without involving change in positional relationship between said probe and said sample.

11. A failure analyzer comprising:

a solid immersion lens;

a stage including a first main surface and a second main surface opposite to said first main surface, said solid immersion lens being embedded in said stage; and

a failure detector including an optical system and detecting a failure caused in a sample using said optical system, wherein

a portion of a surface of said solid immersion lens is flat and is exposed to be flush with said first main surface of said stage,

said sample is mounted so as to extend over said first main surface of said stage and said portion of said surface of said solid immersion lens, and

said failure detector irradiates a light onto said sample through said stage and said solid immersion lens from a direction of said second main surface of said stage, or detects a light which is emitted from said sample and penetrates through said solid immersion lens and said stage.

12. The failure analyzer according to claim 11, wherein

said stage is made of quartz glass.

13. The failure analyzer according to claim 11, wherein

a protrusion functioning as a convex lens is provided in said second main surface of said stage, said protrusion being aligned with said solid immersion lens along a thickness of said stage, and

said light irradiated by said failure detector onto said sample penetrates through said protrusion, said stage and said solid immersion lens, or said light which is emitted from said sample and is detected by said failure detector penetrates through said solid immersion lens, said stage and said protrusion.

14. The failure analyzer according to claim 11, wherein

said solid immersion lens embedded in said stage includes a plurality of solid immersion lenses.

15. The failure analyzer according to claim 14, wherein

said sample includes a semiconductor wafer in which a plurality of semiconductor chips are provided, and

said plurality of solid immersion lenses are situated so as to face said plurality of semiconductor chips, respectively, to be used for analyzing said plurality of semiconductor chips, respectively.

16. The failure analyzer according to claim 14,

each of said plurality of solid immersion lenses is spherical, and

said plurality of solid immersion lenses include respective locally spherical surfaces with different radiuses.

17. The failure analyzer according to claim 11, further comprising:

a support member for supporting said sample independently of said stage and said solid immersion lens; and

a first driver for moving said stage in parallel to said first main surface of said stage.

18. The failure analyzer according to claim 17, further comprising

a second driver for moving said optical system of said failure detector in parallel to said first main surface of said stage, wherein

said first driver notifies said second driver of movement information of said stage, and

said second driver moves said optical system based on said movement information.

19. The failure analyzer according to claim 11, further comprising:

a probe coming into contact with said sample on said stage and said solid immersion lens; and

a driver for moving said probe and said sample in parallel to said first main surface of said stage independently of said stage without involving change in positional relationship between said probe and said sample.